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(54) IMAGE RECORDER AND IMAGE RECORDING CONTROL METHOD

(57)Abstract:

PROBLEM TO BE SOLVED: To prevent the occurrence of incompatibility between animation image data which are generated by using still image data recorded in a DVD menu and a disk and recorded image data in an image recorder that uses a DVD+RW standard disk type recording medium.

SOLUTION: In the image recorder a disk information obtaining section 250 obtains information related to a disk 49a. A disk decision section 260 decides to determine whether the kind of the disk 49 is an object disk to which animation image data that are generated by using still image data recorded in a DVD menu

or a disk by DVD+RW or not an additional recording control section 220 conducts control of additional recording for the disk 49 in accordance with the decision result by the disk decision section 260 and a message display control section 270 asks a display section 280 to display a confirmation message during a mode transition relative to for and against the additional recording and an update confirmation message of the DVD menu and the animation image data.

CLAIMS

[Claim(s)]

[Claim 1]

A disk judging means which judges whether the classification is a predetermined classification and it is the object disk which is recording a predetermined menu about a disk with which it is equipped

An additional recording control means which performs a matching process to additional recording when judged with said disk with which it is equipped being said object disk in said disk judging means

A providing image recorder.

[Claim 2]

A disk judging means which judges whether the classification is DVD+RW and it is the object disk which is recording a predetermined menu about a disk with which it is equipped

An additional recording control means which performs a matching process to additional recording when judged with said disk with which it is equipped being said object disk in said disk judging means

A providing image recorder.

[Claim 3]

The image recorder according to claim 2 characterized by a thing in which said disk judging means is said object disk when a recording form of said disk with which it is equipped is DVD+RW format video further and to do for a purport

judging.

[Claim 4]

The image recorder according to claim 2 wherein said predetermined menu is the DVD menu holding a list of dynamic image data currently recorded on said disk with which it is equipped.

[Claim 5]

The image recorder according to claim 2 wherein said predetermined menu is a photograph movie which holds as video still picture information currently recorded on said disk with which it is equipped.

[Claim 6]

The image recorder according to claim 2 when said additional recording control means is carried out [additional recording over said disk with which it is equipped] wherein it makes said predetermined menu delete as said matching process.

[Claim 7]

The image recorder according to claim 2 when additional recording over said disk with which it is equipped is carried out and said additional recording control means is directed [drawing of the disk concerned] wherein it makes said predetermined menu update based on said additional recording as said matching process.

[Claim 8]

A message indicator control means which displays a predetermined message

An operational input receiving means which receives a predetermined operational input

It provides in a pan

Said additional recording control means displays an updating check of said predetermined menu on said message indicator control means as said matching process when additional recording over said disk with which it is equipped is carried out and drawing of the disk concerned is directed The image recorder according to claim 2 making said predetermined menu update based on said

additional recording when said operational input receiving means receives a check of a purport that it updates.

[Claim 9]

A disk judging means which judges whether the classification is DVD+RW and it is the object disk which is recording a predetermined menu about a disk with which it is equipped

A message indicator control means which an acknowledgment indicator of making possible additional recording over said disk with which it is equipped is made when judged with said disk with which it is equipped being said object disk in said disk judging means

An operational input receiving means which receives a confirmation input to said acknowledgment indicator

An additional recording control means which performs a matching process to said additional recording when it is shown that said confirmation input makes said additional recording possible

A providing image recorder.

[Claim 10]

The image recorder according to claim 9 characterized by a thing in which said disk judging means is said object disk when a recording form of said disk with which it is equipped is DVD+RW format video furtherand to do for a purport judging.

[Claim 11]

The image recorder according to claim 9wherein said predetermined menu is the DVD menu holding a list of dynamic image data currently recorded on said disk with which it is equipped.

[Claim 12]

The image recorder according to claim 9wherein said predetermined menu is a photograph movie which holds as video still picture information currently recorded on said disk with which it is equipped.

[Claim 13]

The image recorder according to claim 9 wherein said additional recording control means makes said predetermined menu delete as said matching process.

[Claim 14]

The image recorder according to claim 9 when said additional recording control means is carried out [additional recording over said disk with which it is equipped] wherein it makes said predetermined menu delete as said matching process.

[Claim 15]

The image recorder according to claim 9 when additional recording over said disk with which it is equipped is carried out and said additional recording control means is directed [drawing of the disk concerned] wherein it makes said predetermined menu update based on said additional recording as said matching process.

[Claim 16]

Said additional recording control means displays an updating check of said predetermined menu on said message indicator control means as said matching process when additional recording over said disk with which it is equipped is carried out and drawing of the disk concerned is directed The image recorder according to claim 9 making said predetermined menu update based on said additional recording when said operational input receiving means receives a check of a purport that it updates.

[Claim 17]

The image recorder according to claim 9 wherein said message indicator control means carries out again an acknowledgment indicator of making said additional recording possible when it is shown that said confirmation input does not make said additional recording possible and the reclosing of the power supply is carried out.

[Claim 18]

The image recorder according to claim 9 wherein said message indicator control means carries out again an acknowledgment indicator of making said additional

recording possible when it is shown that said confirmation input does not make said additional recording possible and a predetermined photographing mode change is performed.

[Claim 19]

The image recorder according to claim 9 wherein said message indicator control means carries out again an acknowledgment indicator of making said additional recording possible when it is shown that said confirmation input does not make said additional recording possible and predetermined photographing operation is performed.

[Claim 20]

A disk judging means which judges whether the classification is DVD+RW and it is the object disk which is recording a predetermined menu about a disk with which it is equipped

An additional recording control means to which additional recording is forbidden when judged with said disk with which it is equipped being said object disk in said disk judging means

A providing image recorder.

[Claim 21]

The image recorder according to claim 20 characterized by a thing in which said disk judging means is said object disk when a recording form of said disk with which it is equipped is DVD+RW format video further and to do for a purport judging.

[Claim 22]

A procedure of judging classification of a disk with which it is equipped

A procedure of judging whether said disk with which it is equipped recording a predetermined menu

A procedure of classification of said disk with which it is equipped being DVD+RW and performing a matching process to additional recording when judged with recording said predetermined menu

A providing image recording control method.

[Claim 23]

A procedure of judging classification of a disk with which it is equipped

A procedure of judging whether said disk with which it is equipped recording a predetermined menu

A procedure of classification of said disk with which it is equipped being DVD+RWand performing an acknowledgment indicator of making possible additional recording over said disk with which it is equipped when judged with recording said predetermined menu

A procedure of receiving a confirmation input to said acknowledgment indicator

A procedure of performing a matching process to said additional recording when it is shown said confirmation input making said additional recording possible

A providing image recording control method.

[Claim 24]

A procedure of judging classification of a disk with which it is equipped

A procedure of judging whether said disk with which it is equipped recording a predetermined menu

A procedure of classification of said disk with which it is equipped being DVD+RWand performing a matching process of a predetermined menu to additional recording when judged with recording said predetermined menu

A program which a computer is made to execute.

[Claim 25]

A procedure of judging classification of a disk with which it is equipped

A procedure of judging whether said disk with which it is equipped recording a predetermined menu

A procedure of classification of said disk with which it is equipped being DVD+RWand performing an acknowledgment indicator of making possible additional recording over said disk with which it is equipped when judged with recording said predetermined menu

A procedure of receiving a confirmation input to said acknowledgment indicator

A procedure of performing a matching process of a predetermined menu to said

additional recording when it is shown said confirmation input making said additional recording possible
A program which a computer is made to execute.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[Field of the Invention]

[0001]

Especially this invention relates to the program which makes a computer perform the image recorder holding the predetermined menu about the recorded picture to carry out the image recording control method and the method concerned about an image recorder.

[Background of the Invention]

[0002]

In recent years with the spread of disk type recording media such as DVD (Digital Versatile Disk) it replaces with the conventional tape type recording medium also in portable image recorders such as a digital camcorder and a disk type recording medium is used. In the image recorder using this disk type recording medium reproduction and deletion of the prescribed unit of recording image data can be easily realized with the characteristic of the disk type recording medium that random access is possible.

[0003]

In DVD the menu screen called the DVD menu is prepared as a user interface which provides access to the recorded dynamic image data. The representative picture image of dynamic image data is expressed as this DVD menu as a thumbnail by making the title or chapter in DVD into a unit.

[0004]

On the other hand in the image recorder which can record not only video but a

still picture the dynamic image data called a photograph movie may be held. This photograph movie displays the recorded still picture one by one. Predetermined background music can also be simultaneously passed now. In the DVD menu this photograph movie is displayed as the last video when it exists.

[0005]

By the way as a classification of recordable DVD the DVD-R standard which made record possible only once about the same field the DVD-RW standard in which repetition rewriting is possible a DVD+RW standard etc. are known. In DVD in which these records are possible the DVD menu and a photograph movie are generated by performing FAINA rise processing (for example refer to patent documents 1.).

[Patent documents 1] JP2004-201170A ([drawing 7](#))

[Description of the Invention]

[Problem(s) to be Solved by the Invention]

[0006]

Among recordable DVDs in a DVD-R standard or a DVD-RW standard once FAINA rise processing is performed it will become impossible to carry out additional recording of the new image data after that. In order to newly carry out additional recording of the image data it is necessary to pass through the procedure of canceling FAINA rise processing by ANFAINARAIZU processing.

[0007]

However in the DVD-Video form (DVD+RW format video) of a DVD+RW standard even if it is after FAINA rise processing was performed it is possible to carry out additional recording of the new image data. Therefore it is also possible to leave the existing DVD menu and photograph movie as it is and to perform additional recording and it has a possibility that mismatching may arise between the DVD menu a photograph movie and the image data actually recorded in that case. Therefore in order to perform additional recording of new image data in a DVD+RW standard it is necessary to perform a certain matching process between

the DVD menu photograph movie and image data.

[0008]

Then in the image recorder which used the disk type recording medium of the DVD+RW standard an object of this invention is to prevent the mismatching which may be produced between the DVD menu photograph movie and image data.

[Means for Solving the Problem]

[0009]

An image recorder this invention is characterized by that comprises the following. A disk judging means which is made in order to solve an aforementioned problem and judges whether the 1st side is a classification predetermined about a disk with which it is equipped in the classification and it is the object disk which is recording a predetermined menu.

An additional recording control means which performs a matching process to additional recording when judged with a disk with which it is equipped [above-mentioned] in the above-mentioned disk judging means being the above-mentioned object disk.

Thereby when a predetermined menu is recorded in a disk of a predetermined classification operation of performing a matching process to additional recording is brought about.

[0010]

A disk judging means the classification judges whether it is DVD+RW and is the object disk which is recording a predetermined menu about a disk with which it is equipped with the 2nd side of this invention to be. When judged with a disk with which it is equipped [above-mentioned] in the above-mentioned disk judging means being the above-mentioned object disk it is an image recorder possessing an additional recording control means which performs a matching process to additional recording. Thereby classification of a disk is DVD+RW and when a predetermined menu is recorded operation of performing a matching process to additional recording is brought about.

[0011]

In this 2nd side the above-mentioned disk judging means may be restricted when a recording form of a disk with which it is equipped [above-mentioned] is DVD+RW format video further and it may be a thing which is the above-mentioned object disk and which carries out a purport judging. Thereby when it is especially DVD+RW format video operation of performing a matching process to additional recording is brought about.

[0012]

In this 2nd side the above-mentioned predetermined menu A photograph movie which holds as video still picture information currently recorded on the DVD menu holding a list of dynamic image data currently recorded on a disk with which it is equipped [above-mentioned] or a disk with which it is equipped [above-mentioned] can be assumed. These are generated in the case of a FAIRNA rise and may be generated by user's operation.

[0013]

As the above-mentioned matching process in this 2nd side (a). When additional recording over a disk with which it is equipped [above-mentioned] is carried out make the above-mentioned predetermined menu delete. (b). When additional recording over a disk with which it is equipped [above-mentioned] is carried out and drawing of the disk concerned is directed make the above-mentioned predetermined menu update based on the above-mentioned additional recording. (c) When additional recording over a disk with which it is equipped [above-mentioned] is carried out and drawing of the disk concerned is directed after performing an updating check of the above-mentioned predetermined menu processing of making the above-mentioned predetermined menu update based on the above-mentioned additional recording etc. is applicable.

[0014]

A disk judging means the classification judges whether it is DVD+RW and is the object disk which is recording a predetermined menu about a disk with which it is equipped with the 3rd side of this invention to be a message indicator control means which an acknowledgment indicator of making possible additional

recording over a disk with which it is equipped [above-mentioned] is made when judged with a disk with which it is equipped [above-mentioned] in the above-mentioned disk judging means being the above-mentioned object disk. It is an image recorder possessing an operational input receiving means which receives a confirmation input to the above-mentioned acknowledgment indicator and an additional recording control means which performs a matching process to the above-mentioned additional recording when it is shown that the above-mentioned confirmation input makes the above-mentioned additional recording possible. Thereby, classification of a disk is DVD+RW and when a predetermined menu is recorded after checking making additional recording possible, operation of performing a matching process to additional recording is brought about.

[0015]

In this 3rd side, the above-mentioned disk judging means may be restricted when a recording form of a disk with which it is equipped [above-mentioned] is DVD+RW format video, further, and it may be a thing which is the above-mentioned object disk and which carries out a purport judging. Thereby, when it is especially DVD+RW format video, operation of performing a matching process to additional recording is brought about.

[0016]

In this 3rd side, the above-mentioned predetermined menu is a photograph movie which holds as video still picture information currently recorded on the DVD menu holding a list of dynamic image data currently recorded on a disk with which it is equipped [above-mentioned] or a disk with which it is equipped [above-mentioned] can be assumed. These are generated in the case of a FAIRY rise and may be generated by user's operation.

[0017]

As the above-mentioned matching process in this 3rd side (a). When additional recording over a disk by which the (b) above-mentioned wearing is carried out which makes the above-mentioned predetermined menu delete unconditionally is carried out, make the above-mentioned predetermined menu delete. (c). When

additional recording over a disk with which it is equipped [above-mentioned] is carried out and drawing of the disk concerned is directedmake the above-mentioned predetermined menu update based on the above-mentioned additional recording. (d) When additional recording over a disk with which it is equipped [above-mentioned] is carried out and drawing of the disk concerned is directedafter performing an updating check of the above-mentioned predetermined menuprocessing of making the above-mentioned predetermined menu update based on the above-mentioned additional recording etc. is applicable.

[0018]

In this 3rd sidethe above-mentioned message indicator control means(1) When it is shown that the above-mentioned confirmation input does not make the above-mentioned additional recording possible and the reclosing of the power supply is carried out(2) When it is shown that the above-mentioned confirmation input does not make the above-mentioned additional recording possible and a predetermined photographing mode change is performed(3) When it is shown that the above-mentioned confirmation input does not make the above-mentioned additional recording possibleit may be made to carry out an acknowledgment indicator of setting at least they to be [any]when predetermined photographing operation is performedand making the above-mentioned additional recording possible again.

[0019]

A disk judging means the classification judges whether it is DVD+RW and is the object disk which is recording a predetermined menu about a disk with which it is equipped with the 4th side of this invention to beWhen judged with a disk with which it is equipped [above-mentioned] in the above-mentioned disk judging means being the above-mentioned object diskit is an image recorder possessing an additional recording control means to which additional recording is forbidden. Therebyclassification of a disk is DVD+RWand when a predetermined menu is recordedoperation of forbidding additional recording uniformly is brought about.

[0020]

In this 4th side the above-mentioned disk judging means may be restricted when a recording form of a disk with which it is equipped [above-mentioned] is DVD+RW format video further and it may be a thing which is the above-mentioned object disk and which carries out a purport judging. Thereby when it is especially DVD+RW format video operation of performing a matching process to additional recording is brought about.

[0021]

A procedure in which the 5th side of this invention judges classification of a disk with which it is equipped A procedure of judging whether a disk with which it is equipped [above-mentioned] recording a predetermined menu Classification of a disk with which it is equipped [above-mentioned] is DVD+RW and when judged with recording the above-mentioned predetermined menu it is the image recording control method possessing a procedure of performing a matching process to additional recording. Thereby classification of a disk is DVD+RW and when a predetermined menu is recorded operation of performing a matching process to additional recording is brought about.

[0022]

A procedure in which the 6th side of this invention judges classification of a disk with which it is equipped A procedure of judging whether a disk with which it is equipped [above-mentioned] recording a predetermined menu A procedure of classification of a disk with which it is equipped [above-mentioned] being DVD+RW and performing an acknowledgment indicator of making possible additional recording over a disk with which it is equipped [above-mentioned] when judged with recording the above-mentioned predetermined menu it is the image recording control method possessing a procedure of receiving a confirmation input to the above-mentioned acknowledgment indicator and a procedure of performing a matching process to the above-mentioned additional recording when it is shown the above-mentioned confirmation input making the above-mentioned additional recording possible. Thereby classification of a disk is

DVD+RW and when a predetermined menu is recorded after checking making additional recording possible operation of performing a matching process to additional recording is brought about.

[0023]

A procedure in which the 7th side of this invention judges classification of a disk with which it is equipped A procedure of judging whether a disk with which it is equipped [above-mentioned] recording a predetermined menu Classification of a disk with which it is equipped [above-mentioned] is DVD+RW and when judged with recording the above-mentioned predetermined menu it is a program which makes a computer perform a procedure of performing a matching process of a predetermined menu to additional recording. Thereby classification of a disk is DVD+RW and when a predetermined menu is recorded operation of performing a matching process to additional recording is brought about.

[0024]

A procedure in which the 8th side of this invention judges classification of a disk with which it is equipped A procedure of judging whether a disk with which it is equipped [above-mentioned] recording a predetermined menu A procedure of classification of a disk with which it is equipped [above-mentioned] being DVD+RW and performing an acknowledgment indicator of making possible additional recording over a disk with which it is equipped [above-mentioned] when judged with recording the above-mentioned predetermined menu When a procedure of receiving a confirmation input to the above-mentioned acknowledgment indicator and a purport that the above-mentioned confirmation input makes the above-mentioned additional recording possible are shown it is a program which makes a computer perform a procedure of performing a matching process of a predetermined menu to the above-mentioned additional recording. Thereby classification of a disk is DVD+RW and when a predetermined menu is recorded after checking making additional recording possible operation of performing a matching process to additional recording is brought about.

[Effect of the Invention]

[0025]

According to this invention in the image recorder using the disk type recording medium of the DVD+RW standard the outstanding effect of preventing the mismatching which may be produced between the DVD menu and photograph movie and image data can be done so.

[Best Mode of Carrying Out the Invention]

[0026]

Next an embodiment of the invention is described in detail with reference to drawings.

[0027]

Drawing 1 is a figure showing the example of 1 composition of the image recorder 100 in an embodiment of the invention. This image recorder 100 is provided with the following.

Camera part 10.

Record reproduction treating part 20.

Control section 30.

[0028]

The camera part 10 is provided with the following.

Optical block 11.

Camera control part 12.

Signal converter 13.

The imaging signal treating part 14, the voice input part 15 and the voice signal processing section 16.

The optical block 11 is equipped with a lens group, a diaphragm adjustment mechanism, a focus adjustment mechanism, a zoom mechanism, a shutter mechanism, a flash plate mechanism, a blurring correction mechanism, etc. for picturizing a photographic subject. The camera control part 12 generates the control signal supplied to the optical block 11 in response to a control signal from the control section 30. And the generated control signal is supplied to the optical

block 11 and zoom control, shutter control, exposure control, etc. are controlled.

[0029]

The signal converter 13 is constituted by image sensor, such as CCD (Charge Coupled Device) for example, and image formation of the image which was similar to the image formation face in the optical block 11 is carried out. This signal converter 13 changes into an imaging signal the object image by which image formation is carried out to the image formation face in response to the image taking timing signal supplied from the control section 30 according to shutter operation and supplies it to the imaging signal treating part 14.

[0030]

The imaging signal treating part 14 also performs processing which changes an imaging signal into the picture signal as a digital signal while processing the gamma correction about an imaging signal, AGC (Auto Gain Control), etc. based on the control signal from the control section 30. The voice input part 15 collects the sounds of the photographic subject circumference at the time of photography. The audio signal from this voice input part 15 is supplied to the voice signal processing section 16. The voice signal processing section 16 also performs processing which changes an audio signal into a digital signal while processing the amendment about an audio signal, AGC, etc. based on the control signal from the control section 30.

[0031]

The record reproduction treating part 20 is provided with the following.

Encoding/decoding circuit 21.

Disk interface 23.

Output processing part 24.

Buffer memory 25.

[0032]

The encoding/decoding circuit 21 has an encoding function which codes and multiplexes the picture signal and audio signal from the camera part 10 and

additional recording information and changes into compressed data. On the other hand, the encoding/decoding circuit 21 has the function of decoding which separates and decodes a picture signal and an audio signal and additional recording information from compressed data. The encoding/decoding circuit 21 performs further automatic white balance control, exposure correction control, expansion control according to digital zoom magnification, etc. to the picture signal from the imaging signal processing part 14 based on the control signal from the control section 30.

[0033]

The disk interface 23 is written in the disk 49 in response to compressed data from the encoding/decoding circuit 21. The disk interface 23 reads compressed data from the disk 49 and supplies it to the encoding/decoding circuit 21. The output processing part 24 supplies the compressed data from the encoding/decoding circuit 21 to the control section 30 or the output terminals 27 through/or 29 by control from the control section 30. The buffer memory 25 is constituted by SDRAM, etc. for example, and is used as workspace for the coding or decoding in the encoding/decoding circuit 21.

[0034]

The control section 30, the processing unit 31, and ROM (Read Only Memory) 33, RAM (Random Access Memory) 34, and the operational input interface 35 for connecting the operation input section 41. It is constituted by connecting the display control part 36 for connecting the indicator 42, the memory card interface 37 for loading with the memory card 43, and the clock circuit 39 for recording photographing time via the system bus 32.

[0035]

The processing unit 31 manages processing of the control section 30 whole and uses RAM 34 as workspace. The program for performing record control, reproduction control, etc. of the program for controlling the camera part 10a picture signal or an audio signal is written in ROM 33.

[0036]

In the operation input section 41 connected to the operational input interface 35. Two or more keys such as the mode switching key which switches photographing mode and other modes such as reproduction mode, a zooming adjustment key, a key for exposure adjustment, a shutter key, a key for animation photography, and a display adjustment key in the indicator 42 are provided. The operational input interface 35 tells the manipulate signal from the operation input section 41 to the processing unit 31. It distinguishes whether the processing unit 31 is set to the operation input section 41 and the key of the gap was operated and control management according to the discriminated result is performed.

[0037]

The indicator 42 connected to the display control part 36 is constituted by LCD (Liquid Crystal Display) etc. for example and displays the picture signal from the camera part 10 and the picture signal read from the disk 49 under control of the processing unit 31.

[0038]

The memory card interface 37 writes the compressed data from the encoding decoding circuit 21 in the memory card 43. The memory card interface 37 reads compressed data from the memory card 43 and supplies it to the encoding decoding circuit 21. The clock circuit 39 generates the hour entry showing a year, the month, a day, time, a part, a second, etc.

[0039]

Drawing 2 is a figure showing the example of functional constitution of the image recorder 100 in an embodiment of the invention. Here, as a function in the image recorder 100, the image pick-up part 210, the additional recording control section 220, the additional recording mode attaching part 230, the disk control section 240, the disk information acquisition part 250, the disk judgment part 260, the message indicator control section 270, the indicator 280, and the operational input reception part 290 are shown.

[0040]

The image pick-up part 210 pictures a photographic subject and is realized by

the camera part 10 grade of drawing 1. The disk control section 240 controls the writing and read-out to the disk 49 and is realized by the record reproduction treating part 20 of drawing 1. The disk information acquisition part 250 acquires the information about the disk 49 via the disk control section 240 and is realized by the processing unit 31 of drawing 1.

[0041]

The disk judgment part 260 judges whether the disk 49 is an object of the matching process in an embodiment of the invention and is realized by the processing unit 31 of drawing 1. In this disk judgment part 260 the classification of the disk 49 a recording format and a recorded state are judged. When a recording form is [the classification of the disk 49] DVD+RW format video in DVD+RW and the DVD menu or the photograph movie is more specifically recorded it judges that the disk 49 is a disk (henceforth an "object disk") which is the target of the matching process in an embodiment of the invention.

[0042]

The additional recording control section 220 performs control at the time of performing additional recording over the disk 49 according to the decision result by the disk judgment part 260 and is realized by the processing unit 31 of drawing 1. That is the additional recording control section 220 controls each part for the matching process which prevents the mismatching between the DVD menu or a photograph movie and the recorded image of the disk 49.

[0043]

The additional recording mode attaching part 230 holds the mode about the propriety of additional recording to the disk 49 and is realized by the RAM 34 grade of drawing 1. As the mode held at this additional recording mode attaching part 230 the mode which makes additional recording possible and the mode which makes additional recording impossible can be considered. It may be made to shift under a user's directions or permission whether it is set in which mode and it may be made to shift automatically.

[0044]

The message indicator control section 270 displays the confirmation message in the case of shift of the mode about the propriety of additional recording and the updating confirmation message of the DVD menu and a photograph movie on the indicator 280 and is realized by the display control part 36 grade of drawing 1. The indicator 280 displays a message under control of the message indicator control section 270 and is realized by the indicator 42 of drawing 1. The operational input reception part 290 receives the operational input by a user and is realized by the operational input interface 35 grade of drawing 1.

[0045]

Next the decision contents of the disk judgment part 260 in an embodiment of the invention are explained.

[0046]

Drawing 3 is a figure showing the contents of the lead-in groove field in various disks. The disk has disc-like shape and the lead-in groove (lead-in) field is established in the inner circumference side. The address is given to this lead-in groove field from the inner circumference side and each field is arranged from the smaller one of the address also in which disk in order of an initial zone, the reference code zone, the buffer zone, the control data zone, and the buffer zone.

[0047]

The information about that disk is recorded on the control data zone 400 arranged in this from "2F200h" (h means that the number before that is a hexadecimal number) by "2FDFFh." The arrangement address of this control data zone 400 is common also in which disk.

[0048]

Drawing 4 is a figure showing the contents of the control data zone 400. If drawing 4 (a) is referred to, the control data zone 400 will be provided with the following.

2048 bytes of physical format information 410.

2048 bytes of disk manufacture information 420.

14x2048 bytes of contents provider information 430.

[0049]

If drawing 4 (b) is referred to the physical format information 410 will be provided with the following.

A disk type and the version number 411.

Data size and the maximum transfer rate 412.

Disk structure 413.

The storage density 414 the data zone assignment 415 the BCA descriptor 416 and the reserved areas 417 and 418.

4 bits of low ranks are for top 4 bits to express a disk type and for the disk type of 1 byte of head and the version number 411 to express a version number in this.

That is if top 4 bits of a disk type and the version number 411 are "1010b" (b means that the number before that is a binary number) it is DVD+RW if it is "0000b" it is DVD-ROM and if it is "0010b" it expresses that it is DVD-R.

[0050]

Thus the classification of a disk can be judged by investigating top 4 bits of the disk type in the physical format information 410 of a lead-in groove field and the version number 411.

[0051]

Drawing 5 is a figure showing the data structure of the disk by DVD-Video form (DVD+RW format video). The disk has disc-like shape the lead-in groove field 711 is established in the inner circumference side and the lead-out field 715 is established in the periphery side. And the file system field 712 the management information field 713 and the data recording regions 714 are formed in order toward the periphery side from the inner circumference side. The file system field 712 is a management domain of a file system and it is provided so that it may be based on the standard of ISO9660 and UDF (Universal Disk Format). The management information field 713 is a field holding the management information of the whole video content currently recorded on the disk. The data recording regions 714 are fields holding the contents of each video title set and its control

information. These fields are classified into 2048 bytes of logical sector.

[0052]

VMG(Video ManaGer)730 is held in the management information field 713. This VMG730 is provided with the following.

VMGI(VMG Information)731.

VMGM_VOBS(Video OBject Set for VMG Menu)732.

VMGI_BUP(VMGI for Back UP)734.

VMGI731 holds management information for every title of video content control information on a top menu etc. which are recorded on the disk. VMGM_VOBS732 holds the data of a top menu. VMGI_BUP734 is a copy for backup of VMGI731.

[0053]

In the data recording regions 714 at least one VTS(Video Titles Set)740 is held.

Each VTS740 is provided with the following.

It is VTSI(VTS Information)741 respectively.

VTSM_VOBS(Video OBject Set for VTS Menu)742.

VTSTT_VOBS(Video Object Set for Titles in a VTS)743.

VTSI_BUP(VTSI for Back UP)744.

VTSI741 holds the management information for every chapter of a title control information control information on a chapter menu which are included in the video title set. VTSM_VOBS742 holds the data of a chapter menu. VTSTT_VOBS743 holds the data of the title contained in the video title set. VTSI_BUP744 is a copy for backup of VTSI741.

[0054]

Therefore the recording form of a disk can be judged by investigating whether it is based on such a DVD-Video form (DVD+RW format video). What is necessary is just to investigate the existence of VMGM_VOBS732 in VMG730 in order to judge the existence of the DVD menu. In order to judge the existence of a photograph movie it will be investigated whether the last title is a photograph movie. That is the existence of a photograph movie can be judged by referring to VTSI741 which is equivalent to the last title in VTS740.

[0055]

Drawing 6 is a flow chart showing the determining procedure of the disk judgment part 260 in an embodiment of the invention. First the classification of a disk is acquired (Step S901) and if the classification is not DVD+RW it will be judged with it being a non-object of a matching process (Step S902). When the classification of a disk is DVD+RW the recording form is acquired (Step S903). As a result if not based on DVD+RW format video it is judged with it being a non-object of a matching process (Step S904).

[0056]

And when based on recording form DVD+RW format video Furthermore the state of a disk is acquired (Step S905) and if neither the DVD menu nor the photograph movie is recorded and it is judged with it being a non-object of a matching process and is recorded it will be judged with it being an object of a matching process (Step S906).

[0057]

Next the 1st example of the image recording control method in an embodiment of the invention is described.

[0058]

Drawing 7 is a flow chart showing the procedure by the 1st example of the image recording control method in an embodiment of the invention. In the disk judgment part 260 in an embodiment of the invention. Classification (.) predetermined in the disk 49 with which it is equipped as drawing 6 explained an example That is it is judged whether it is a DVD+RW standard and a recording form (DVD-Video form) and is the object disk which is recording the predetermined menu (the DVD menu or a photograph movie) (Step S911). When judged with it not being an object disk here processing beyond this is not performed.

[0059]

On the other hand when judged with it being an object disk in Step S911 it shifts to the mode which makes additional recording possible (Step S917). Specifically in the additional recording mode attaching part 230 setting out of the purport that it

is the mode which makes additional recording possible is performed. And a matching process is performed under control of the additional recording control section 220 (Step S918). This matching process can apply various modifications so that it may explain below.

[0060]

Drawing 8 is a flow chart showing the 1st example of the matching process in an embodiment of the invention. In the 1st example of this matching process the mismatching of (Step S935) the DVD menu or a photograph movie and a recorded image is prevented by deleting the DVD menu and a photograph movie unconditionally. However in this 1st example since it will not be concerned with the existence of additional recording but the DVD menu and a photograph movie will be deleted there is also a possibility of producing inconvenience depending on the case. Then the 2nd following example was kept from performing deletion of the DVD menu and a photograph movie until additional recording was actually performed.

[0061]

Drawing 9 is a flow chart showing the 2nd example of the matching process in an embodiment of the invention. In the 2nd example of this matching process after shifting to a matching process waiting to perform additional recording (Step S941) and actually performing additional recording the DVD menu and a photograph movie are deleted (Step S945). Thereby only when additional recording is actually performed the DVD menu and a photograph movie can be deleted.

[0062]

Drawing 10 is a flow chart showing the 3rd example of the matching process in an embodiment of the invention. That additional recording is performed even after shifting to a matching process like the 2nd example of drawing 9 in the 3rd example of this matching process Waiting (Step S951) Processing is not performed until the disk with which the additional recording was performed is removed even when additional recording is furthermore performed (Step S952). (until it is ejected) And if the disk is removed after additional recording is

performed it will be updated so that the DVD menu and a photograph movie may agree with the contents of the additional recording (Step S955).

[0063]

Drawing 11 is a flow chart showing the 4th example of the matching process in an embodiment of the invention. In the 4th example of this matching process processing is not performed until a disk is removed even if it is after additional recording as well as the 3rd example of drawing 10 was performed (Step S961S962). And if the disk is removed after additional recording is performed the message which checks the propriety of updating the DVD menu and a photograph movie will be displayed on the indicator 280 by the message indicator control section 270 (Step S963). The contents of a check by a user are received by the operational input reception part 290 and if it is shown the contents of a check "update" it will be updated so that the DVD menu and a photograph movie may agree with the contents of additional recording (Step S965). On the other hand updating will not be performed if it is shown the contents of a check "do not update." In this case a user will update the DVD menu and a photograph movie through menu manipulation etc. later. Otherwise mismatching will arise between the DVD menu and a photograph movie and a recorded image.

[0064]

Next the 2nd example of the image recording control method in an embodiment of the invention is described.

[0065]

Drawing 12 is a flow chart showing the example of transition of the display screen by the 2nd example of the image recording control method in an embodiment of the invention. In the 1st example described by drawing 7 if it is an object disk it will shift to the additional recording possible mode unconditionally but in this 2nd example it differs in that the propriety of the shift to the additional recording possible mode is checked to a user.

[0066]

That is a check of that it is an object disk will display the message screen 810

which checks the propriety of the shift to the additional recording possible mode. If the shift to the additional recording possible mode is checked hereafter the confirmation message screen 820 is displayed againScreen 840 in which under the shift to the additional recording possible mode is shown will be displayedand Screen 850 in which completion is shown will be displayed. After shifting to the additional recording possible modewhen Screen 860 or recording operation which shows a standby state as it is is carried outScreen 870 in which it is shown that it is under record is displayed.

[0067]

On the other handwhen the shift to the additional recording possible mode is refused in the confirmation screen 810 or 820Screen 830 in which forbidding additional recording is shown is displayed. Even if it is in this casewhen a power supply is once disconnected and a power supply is switched on againthe message screen 810 which checks the propriety of the shift to the additional recording possible mode again is displayed. Also when the directions which change photographing modessuch as animation photographing modestill picture photographing modean external input modedisk photographing modeor memory photographing modeare received by the operational input reception part 290The message screen 810 which checks the propriety of the shift to the additional recording possible mode again is displayed. Also when it is received by the operational input reception part 290 that the recording animation start buttonthe static-image-photographing buttonor the external input picture recording button was pushedthe message screen 810 which checks the propriety of the shift to the additional recording possible mode again is displayed.

[0068]

Drawing 13 is a flow chart showing the procedure by the 2nd example of the image recording control method in an embodiment of the invention. In the disk judgment part 260 in an embodiment of the invention. Classification (.) predetermined in the disk 49 with which it is equipped as drawing 6 explained an example That isit is judged whether it is a DVD+RW standard and a recording

form (DVD-Video form) and is the object disk which is recording the predetermined menu (the DVD menu or a photograph movie) (Step S921). When judged with it not being an object disk here processing beyond this is not performed.

[0069]

On the other hand when judged with it being an object disk in Step S921 the confirmation message of whether to shift to the mode which makes additional recording possible is displayed on the indicator 280 by the message indicator control section 270 (Step S922). The contents of a check by a user are received by the operational input reception part 290 (Step S923) and if it is shown the contents of a check "shift" it will shift to the mode which makes additional recording possible (Step S927). Specifically in the additional recording mode attaching part 230 setting out of the purport that it is the mode which makes additional recording possible is performed. And a matching process is performed under control of the additional recording control section 220 (Step S928). This matching process can apply various modifications as it is the same as that of Step S918 of drawing 7 and drawing 8 thru/or 11 explained.

[0070]

On the other hand additional recording will be forbidden if it is shown the contents of a check by a user "do not shift" in Step S923. However even if it is in this case when a power supply is once disconnected and a power supply is switched on again (Step S924) and the message which checks the propriety of the shift to the additional recording possible mode again are displayed (Step S922). Also when the directions which change photographing mode such as animation photographing mode still picture photographing mode an external input mode disk photographing mode or memory photographing mode are received by the operational input reception part 290 (Step S925) The message which checks the propriety of the shift to the additional recording possible mode again is displayed (Step S922). Also when it is received by the operational input reception part 290 that the recording animation start button the static-image-photographing button or

the external input picture recording button was pushed (Step S926)The message which checks the propriety of the shift to the additional recording possible mode again is displayed (Step S922).

[0071]

Thus according to this 2nd example the DVD menu and a photograph movie are not unconditionally deleted like the 1st example Since a matching process is performed after checking the propriety of shifting to the additional recording possible mode to a user it can prevent that deletion which is not expected for a user is performed.

[0072]

Although mismatching with a recorded image is prevented by deleting or updating the DVD menu and a photograph movie in the embodiment of the invention this invention is not restricted to this but may prevent mismatching by other methods. For example about an object disk it is possible to prevent mismatching by providing the simple operation mode of forbidding additional recording uniformly. That is as shown in drawing 14 when it indicates that it is always a record prohibited state when the DVD menu or the photograph movie is recorded and a recording button is pushed it is possible to indicate that record is forbidden. In this case when a user deletes the DVD menu and a photograph movie manually it will be in the state in which additional recording is possible.

[0073]

An embodiment of the invention has correspondence relations with the invention specific matter in a claim respectively as an example for embodying this invention is shown and it is shown below but various modification can be performed in the range which is not limited to this and does not deviate from the gist of this invention.

[0074]

That is in claim 12 or 20 a disk judging means corresponds to the disk judgment part 260. An additional recording control means corresponds to the additional recording control section 220.

[0075]

In claim 8a message indicator control means corresponds to the message indicator control section 270. An operational input receiving means corresponds to the operational input reception part 290.

[0076]

In claim 9a disk judging means corresponds to the disk judgment part 260. An additional recording control means corresponds to the additional recording control section 220. A message indicator control means corresponds to the message indicator control section 270. An operational input receiving means corresponds to the operational input reception part 290.

[0077]

In claim 9a disk judging means corresponds to the disk judgment part 260. An additional recording control means corresponds to the additional recording control section 220.

[0078]

In claim 22 or 24 the procedure of judging the classification of the disk with which it is equipped corresponds to Step S902. The procedure of judging whether the disk with which it is equipped recording the predetermined menu corresponds to Step S906. The procedure of the classification of the disk with which it is equipped being DVD+RW and performing the matching process to additional recording when judged with recording the predetermined menu corresponds to Step S918.

[0079]

In claim 23 or 25 the procedure of judging the classification of the disk with which it is equipped corresponds to Step S902. The procedure of judging whether the disk with which it is equipped recording the predetermined menu corresponds to Step S906. The procedure of performing the acknowledgment indicator of making possible additional recording over the disk with which the classification of the disk with which it is equipped is DVD+RW and it is equipped when judged with recording the predetermined menu corresponds to Step S922. The procedure of

receiving the confirmation input to an acknowledgment indicator corresponds to Step S923. When it is shown that a confirmation input makes additional recording possible the procedure of performing the matching process to additional recording corresponds to Step S928.

[0080]

The procedure explained in the embodiment of the invention may be regarded as a recording medium which memorizes the program thru/or its program for regarding as a method of having a procedure of these series and making a computer perform the procedure of these series.

[Industrial applicability]

[0081]

This invention can be applied when performing additional recording after creation of the DVD menu or a photograph movie in the image recorder for example using the disk type recording medium of the DVD+RW standard as an example of practical use of this invention.

[Brief Description of the Drawings]

[0082]

[Drawing 1] It is a figure showing the example of 1 composition of the image recorder 100 in an embodiment of the invention.

[Drawing 2] It is a figure showing the example of functional constitution of the image recorder 100 in an embodiment of the invention.

[Drawing 3] It is a figure showing the contents of the lead-in groove field in various disks.

[Drawing 4] It is a figure showing the contents of the control data zone 400.

[Drawing 5] It is a figure showing the data structure of the disk by DVD-Video form.

[Drawing 6] It is a flow chart showing the determining procedure of the disk judgment part 260 in an embodiment of the invention.

[Drawing 7] It is a flow chart showing the procedure by the 1st example of the image recording control method in an embodiment of the invention.

[Drawing 8] It is a flow chart showing the 1st example of the matching process in

an embodiment of the invention.

[Drawing 9] It is a flow chart showing the 2nd example of the matching process in an embodiment of the invention.

[Drawing 10] It is a flow chart showing the 3rd example of the matching process in an embodiment of the invention.

[Drawing 11] It is a flow chart showing the 4th example of the matching process in an embodiment of the invention.

[Drawing 12] It is a figure showing the example of transition of the display screen by the 2nd example of the image recording control method in an embodiment of the invention.

[Drawing 13] It is a flow chart showing the procedure by the 2nd example of the image recording control method in an embodiment of the invention.

[Drawing 14] It is a figure showing the example of a display screen by other examples in an embodiment of the invention.

[Description of Notations]

[0083]

10 Camera part

11 Optical block

12 Camera control part

13 Signal converter

14 Imaging signal treating part

15 Voice input part

16 Voice signal processing section

20 Record reproduction treating part

21 Encoding decoding circuit

23 Disk interface

24 Output processing part

25 Buffer memory

30 Control section

31 Processing unit

32 System bath
33 ROM
34 RAM
35 Operational input interface
36 Display control part
37 Memory card interface
39 Clock circuit
41 Operation input section
42 Indicator
43 Memory card
49 Disk
100 Image recorder
210 Image pick-up part
220 Additional recording control section
230 Additional recording mode attaching part
240 Disk control section
250 Disk information acquisition part
260 Disk judgment part
270 Message indicator control section
280 Indicator
290 Operational input reception part

DESCRIPTION OF DRAWINGS

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